

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 4-4-06
 Art Unit: 1752 Phone Number 301-2-1373 Serial Number: 10/789,055
 Mail Box and Bldg/Room Location: 9 D60 Results Format Preferred (circle): PAPER DISK E-MAIL

(Kern.)
 If more than one search is submitted, please prioritize searches in order of need.

 Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Please see Bib.

Inventors (please provide full names): _____

Earliest Priority Filing Date: _____

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search for a photoresist composition
 that contains any of these compounds (Formulas 3-7)
 listed in ci. #13.

SCIENTIFIC REFERENCE BR
 Sci & Tech Inf. Cntr.

APR 5 REC'D

Pat. & T.M. Office

STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>YH</u>	NA Sequence (#) _____	STN <u>\$526.13</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>2</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr.Link _____
Date Completed: <u>4/6/06</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>10</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: <u>10</u>	Patent Family _____	WWW/Internet _____
Online Time: <u>50</u>	Other _____	Other (specify) _____

AMENDMENTS TO THE CLAIMS:

Please cancel claims 1-12 and 17-20 without prejudice.

Please amend claims 13-16 and 21-24, as follows.

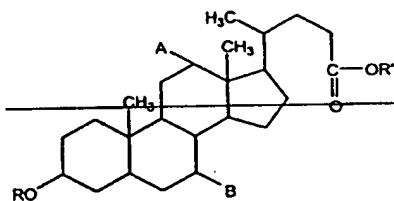
Please add new claims 25-28, as follows.

Claims 1-12 (Canceled)

13. (Currently Amended) A resist flow process for forming a photoresist pattern comprising the steps of:

(a) forming a first photoresist pattern on a substrate using a photoresist composition comprising a photoresist polymer, a photo acid generator, an organic solvent, and an additive of following Formula 1 selected from the group consisting of compounds of following Formulas 3 to 7:

Formula 1



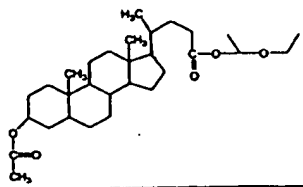
wherein, A is H or OR'' ,

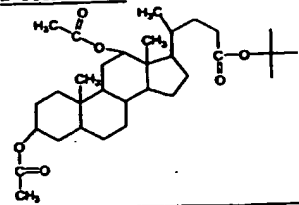
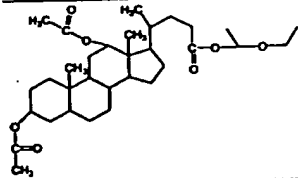
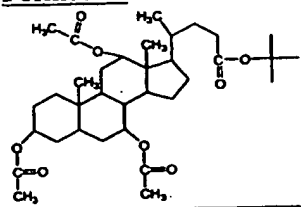
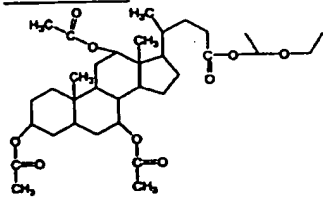
B is H or OR''' , and

R , R' , R'' and R''' are independently selected from the group consisting of $\text{C}_1\text{-C}_{10}$ alkyl, $\text{C}_1\text{-C}_{10}$ alkoxyalkyl, $\text{C}_1\text{-C}_{10}$ alkylcarbonyl, and $\text{C}_1\text{-C}_{10}$ alkyl containing at least one hydroxyl group (-OH);

and

Formula 3



Formula 4Formula 5Formula 6Formula 7

and

(b) producing performing a resist flow process onto the first photoresist pattern to obtain a second photoresist pattern from said first photoresist pattern using a resist flow process.

14. (Previously Presented) The resist flow process according to claim 13, wherein said step (a) further comprises the steps of:

- (i) coating said photoresist composition on said substrate to form a photoresist film, wherein said substrate is a semiconductor device; and
- (ii) producing said first photoresist pattern using a lithography process.

15. (Previously Presented) The resist flow process according to claim 13, wherein said first and second photoresist pattern comprises a contact hole pattern.



UNITED STATES PATENT AND TRADEMARK OFFICE

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 United States Patent and Trademark Office
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 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov



Bib Data Sheet

CONFIRMATION NO. 9165

SERIAL NUMBER 10/789,055	FILING DATE 02/27/2004 RULE	CLASS 430	GROUP ART UNIT 1752	ATTORNEY DOCKET NO. 30205/37328A
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APPLICANTS

Min Ho Jung, Ichon-shi, KOREA, REPUBLIC OF;

Sung Eun Hong, Ichon-shi, KOREA, REPUBLIC OF;

Jae Chang Jung, Ichon-shi, KOREA, REPUBLIC OF; Geun Su Lee, Ichon-shi, KOREA, REPUBLIC OF;

Ki Ho Baik, Ichon-shi, KOREA, REPUBLIC OF;

** CONTINUING DATA *****

This application is a DIV of 09/878,803 06/11/2001 PAT 6,770,414

SJL

** FOREIGN APPLICATIONS *****

REPUBLIC OF KOREA 2000-32984 06/15/2000 SJL

IF REQUIRED, FOREIGN FILING LICENSE GRANTED

** 05/19/2004

Foreign Priority claimed <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	STATE OR COUNTRY KOREA, REPUBLIC OF	SHEETS DRAWING 2	TOTAL CLAIMS 12	INDEPENDENT CLAIMS 1
35 USC 119 (a-d) conditions met <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after Allowance				
Verified and Acknowledged Examiner's Signature <i>[Signature]</i> Initials SJL				

ADDRESS

04743

MARSHALL, GERSTEIN & BORUN LLP

233 S. WACKER DRIVE, SUITE 6300

SEARS TOWER

CHICAGO, IL

60606

TITLE

Additive for photoresist composition for resist flow process

☐ All Fees

=> d his ful

(FILE 'HOME' ENTERED AT 13:26:39 ON 06 APR 2006)

FILE 'HCAPLUS' ENTERED AT 13:26:54 ON 06 APR 2006

E US20040166437/PN

L1 1 SEA ABB=ON PLU=ON US20040166437/PN
D ALL
SEL RN

FILE 'REGISTRY' ENTERED AT 13:28:43 ON 06 APR 2006

L2 15 SEA ABB=ON PLU=ON (109-92-2/BI OR 172615-57-5/BI OR
210040-28-1/BI OR 221172-15-2/BI OR 253157-23-2/BI OR
33628-48-7/BI OR 395666-20-3/BI OR 395666-21-4/BI OR
395666-22-5/BI OR 395666-23-6/BI OR 395666-24-7/BI OR
4057-84-5/BI OR 434-13-9/BI OR 52840-09-2/BI OR
75-65-0/BI)
D SCAN
L3 3 SEA ABB=ON PLU=ON L2 AND PMS/CI
L4 12 SEA ABB=ON PLU=ON L2 NOT L3
D SCAN
D L4 1-12 RN STR

FILE 'LREGISTRY' ENTERED AT 13:36:23 ON 06 APR 2006

L5 STR
L6 STR L5

FILE 'REGISTRY' ENTERED AT 13:50:50 ON 06 APR 2006

L7 0 SEA SSS SAM L6
L8 3 SEA SSS FUL L6
D SCAN
SAV L8 LEE055/A
L9 3 SEA ABB=ON PLU=ON L2 AND L8

FILE 'LREGISTRY' ENTERED AT 13:54:48 ON 06 APR 2006

L10 STR L6

FILE 'REGISTRY' ENTERED AT 13:57:11 ON 06 APR 2006

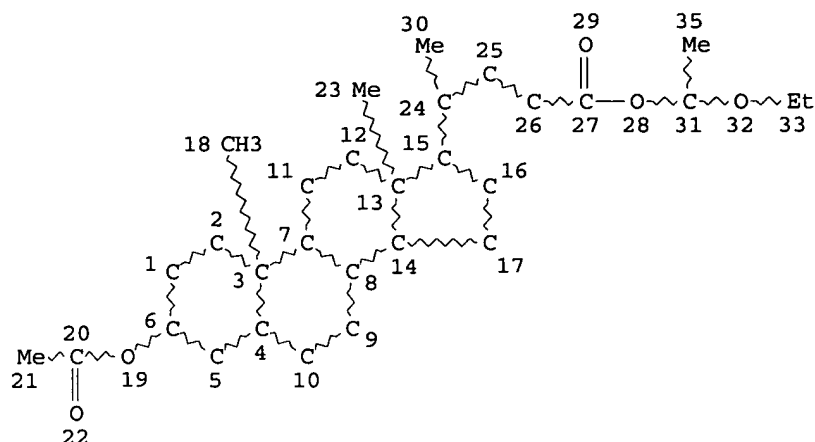
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L12 12 SEA SSS FUL L10
SAV L12 LEE055A/A
D SCAN
L13 3 SEA ABB=ON PLU=ON L2 AND L12
D SCAN

FILE 'HCAPLUS' ENTERED AT 14:00:06 ON 06 APR 2006

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L15 14 SEA ABB=ON PLU=ON L12
L16 10 SEA ABB=ON PLU=ON L13
L17 14 SEA ABB=ON PLU=ON L14 OR L15
L18 QUE ABB=ON PLU=ON RESIST OR RESISTS OR PHOTORESIST?
OR PHOTOMASK? OR (PHOTO# OR POSITIVE OR NEGATIVE) (A) (RE
SIST# OR LITHOG? OR MASK?)
L19 11 SEA ABB=ON PLU=ON L17 AND L18
L20 3 SEA ABB=ON PLU=ON L17 NOT L19

=> => d que stat l19

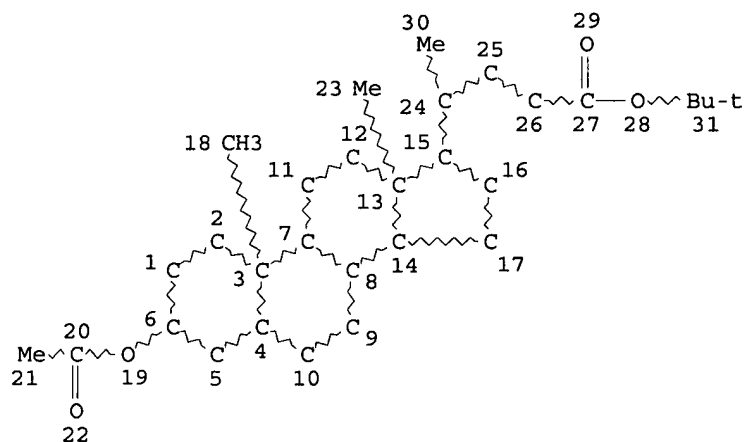
L6 STR



NODE ATTRIBUTES:
 DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 34

STEREO ATTRIBUTES: NONE
 L8 3 SEA FILE=REGISTRY SSS FUL L6
 L10 STR



NODE ATTRIBUTES:
 DEFAULT MLEVEL IS ATOM
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
 RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 31

STEREO ATTRIBUTES: NONE
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 L14 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L8
 L15 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L12
 L17 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L14 OR L15
 L18 QUE ABB=ON PLU=ON RESIST OR RESISTS OR PHOTORESIST?
 OR PHOTOMASK? OR (PHOTO# OR POSITIVE OR NEGATIVE) (A) (RE
 SIST# OR LITHOG? OR MASK?)

L19 11 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 AND L18

=> d l19 1-11 ibib abs hitstr hitind

L19 ANSWER 1 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:769997 HCAPLUS

DOCUMENT NUMBER: 137:302220

TITLE: Positive-working photoresist
composition containing acid decomposable resin
having lactone structure and polycyclic
dissolution inhibitor containing protected
carboxylic acid group

INVENTOR(S): Uenishi, Kazuya; Aogo, Toshiaki; Sato,
Kenichiro

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 79 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

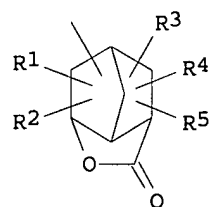
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

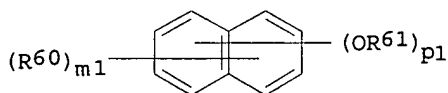
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002296779	A2	20021009	JP 2001-100300	2001 0330
TW 594411	B	20040621	TW 2002-91106292	2002 0329
US 2003031950	A1	20030213	US 2002-109872	2002 0401
US 6962766	B2	20051108	JP 2001-100300	2001 0330

PRIORITY APPLN. INFO.: A

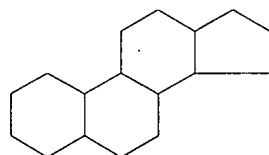
GI



I



II



III

AB The pos.-working photoresist composition comprises (a) a photoacid, (b) a resin having sp. lactone structures which decomp. upon contacting an acid, for example, I (R1-5 = H, alkyl, cycloalkyl, alkenyl), resulting in increasing the alkaline solubility, and

(c) ≥ 1 protected carboxylic acid group-containing polycyclic dissoln. inhibitor represented by $R[X(CR_51R_52)q_1COOR']n_1$, II ($R_{51,52} = H$, alkyl; $R' =$ acid decomposable group; $R =$ bridged hydrocarbon, unsatd. hydrocarbon, n_1 valent residue including naphthalene ring; $n_1 =$ integer 1-4; $q_1 =$ integer 0-10; $R_{60} =$ alkyl, halo; $R_{61} =$ acid decomposable group; $m_1 =$ integer 0-4; and $p_1 =$ integer 1-4), and III. The pos.-working **photoresist** composition provided excellent resolution in trench and contact hole in a semiconductor device fabrication.

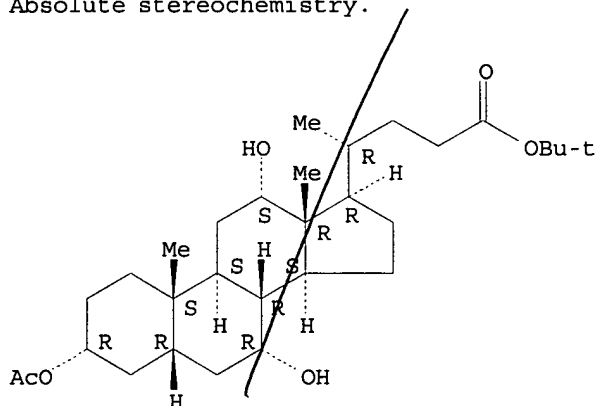
IT 130782-09-1 172615-57-5 421555-80-8
469886-40-6

RL: TEM (Technical or engineered material use); USES (Uses)
(dissoln. inhibitor; pos.-working **photoresist** composition containing)

RN 130782-09-1 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-7,12-dihydroxy-,
1,1-dimethylethyl ester, ($3\alpha,5\beta,7\alpha,12\alpha$)-
(9CI) (CA INDEX NAME)

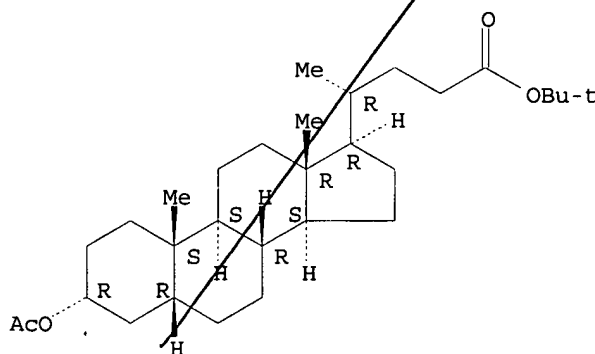
Absolute stereochemistry.



RN 172615-57-5 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-, 1,1-dimethylethyl ester,
($3\alpha,5\beta$)- (9CI) (CA INDEX NAME)

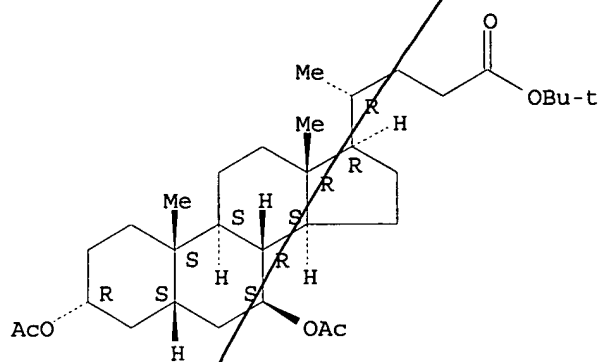
Absolute stereochemistry.



RN 421555-80-8 HCAPLUS

CN Cholan-24-oic acid, 3,7-bis(acetyloxy)-, 1,1-dimethylethyl ester,
($3\alpha,5\beta,7\beta$)- (9CI) (CA INDEX NAME)

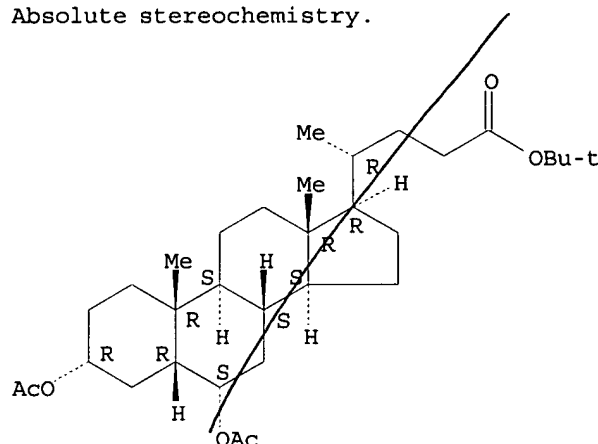
Absolute stereochemistry.



RN 469886-40-6 HCAPLUS

CN Cholan-24-oic acid, 3,6-bis(acetyloxy)-, 1,1-dimethylethyl ester,
(3α,5β,6α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IC ICM G03F007-039

ICS C08K005-00; C08L101-00; G03F007-004; G03F007-20; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)
Section cross-reference(s): 76

ST pos **photoresist** lactone structure resin polycyclic
dissoln inhibitor; photoacid **photoresist** semiconductor
device fabrication

IT **Photoresists**

(Pos.-working **photoresist** composition containing acid
decomposable resin having lactone structure and polycyclic
dissoln. inhibitor containing protected carboxylic acid group)

IT Semiconductor device fabrication

(pos.-working **photoresist** composition for)

IT 115298-62-9 115311-03-0 **130782-09-1**

172615-57-5 207512-00-3 251365-75-0 421555-75-1

421555-78-4 **421555-80-8** 421555-83-1 455901-88-9

469886-35-9 469886-36-0 **469886-40-6**

RL: TEM (Technical or engineered material use); USES (Uses)
(dissoln. inhibitor; pos.-working **photoresist** composition
containing)

IT 66003-78-9 116808-67-4 144089-15-6 144317-44-2 153698-46-5

177786-96-8 177786-98-0 191981-93-8 252937-66-9

258341-98-9 258342-00-6 258872-05-8 270563-93-4

301525-08-6 312386-77-9

RL: TEM (Technical or engineered material use); USES (Uses)

(photoacid; pos.-working **photoresist** composition containing)

IT 157692-53-OP, tert-Butyl deoxycholate
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (preparation of dissoln. inhibitor for pos.-working **photoresist** composition)

IT 216987-27-8P
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (preparation of dissoln. inhibitor for pos.-working **photoresist** composition)

IT 335163-71-8P 340964-24-1P 340964-31-OP 340964-38-7P
 340964-44-5P 364736-20-9P 428516-13-6P 460754-14-7P
 460754-15-8P 469886-27-9P 469886-28-OP 469886-29-1P
 469886-30-4P 469886-31-5P 469886-32-6P 469886-33-7P
 469886-34-8P
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (preparation of resin for pos.-working **photoresist** composition)

L19 ANSWER 2 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:673045 HCAPLUS

DOCUMENT NUMBER: 137:224107

TITLE: Chemically amplified positive-working far-UV **photoresist** compositions suitable for halftone phase-shift masks

INVENTOR(S): Sato, Kenichiro; Uenishi, Kazuya

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 104 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

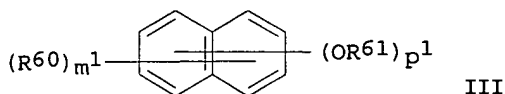
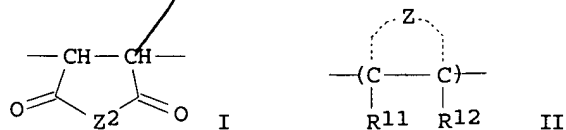
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002251011	A2	20020906	JP 2001-48782	2001 0223

PRIORITY APPLN. INFO.: JP 2001-48782

2001 0223

OTHER SOURCE(S): MARPAT 137:224107

GI



AB The compns. comprise (A) polymers with acid-decomposable groups

comprising repeating units CH(COXAR1)CH(COXAR2) (R1, R2 = H, cyano, OH, CO2H, etc.) and/or I (Z2 = O, NR3; R3 = H, OH, alkyl, haloalkyl, etc.) and other repeating units II (R11, R12 = H, cyano, halo, alkyl; Z = atomic group containing C2 linkage for forming alicyclic structure), (B) dissoln. inhibitors R[X(CR51R52)q1CO2R']n1 (X = O, S, NR53, single linkage; R51-53 = H, alkyl; R' = acid-decomposable group as CO2R'; R = n1-valent residue of bridged hydrocarbon, saturated hydrocarbon, naphthalene; n1 = 1-4; q1 = 0-10) or III (R60 = alkyl, halo; R61 = acid-decomposable group as OR61; m1 = 0-4; p1 = 1-4), and (C) imido sulfonate photoacid generators. The compns. may further contain sulfonium salt photoacid generators.

IT 130782-09-1 172615-57-5 421555-79-5

421555-80-8 455901-89-0 455901-90-3

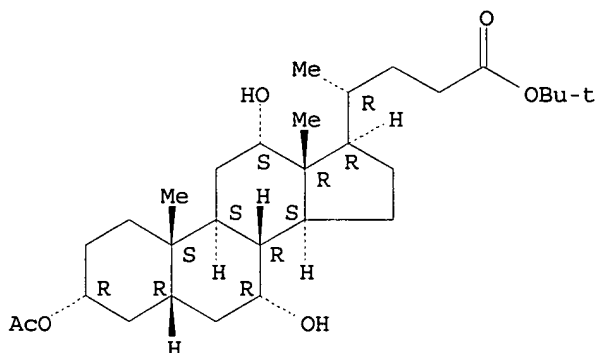
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(dissoln. inhibitor; chemical amplified pos.-working far-UV photoresists suitable for halftone phase-shift masks)

RN 130782-09-1 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-7,12-dihydroxy-, 1,1-dimethylethyl ester, (3 α ,5 β ,7 α ,12 α)-(9CI) (CA INDEX NAME)

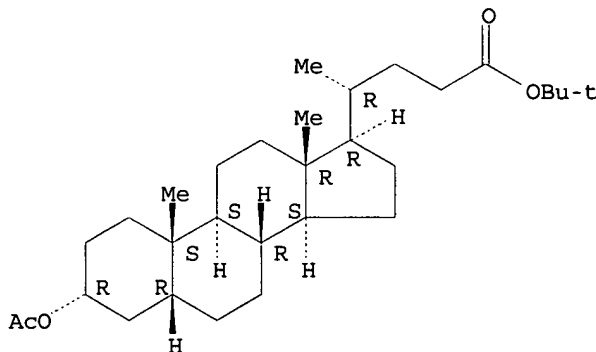
Absolute stereochemistry.



RN 172615-57-5 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-, 1,1-dimethylethyl ester, (3 α ,5 β)-(9CI) (CA INDEX NAME)

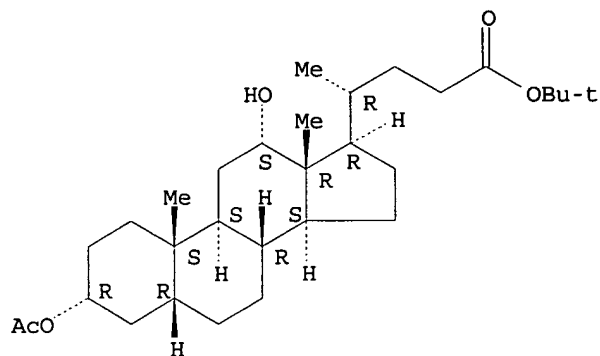
Absolute stereochemistry.



RN 421555-79-5 HCAPLUS

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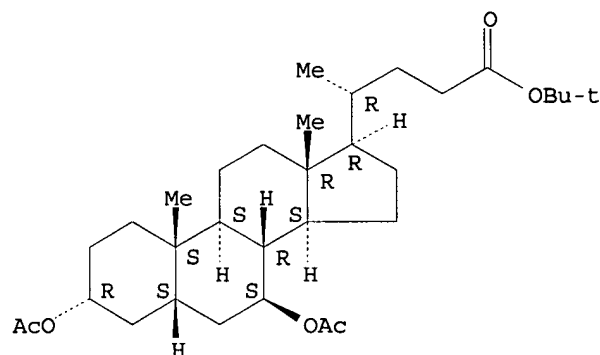
Absolute stereochemistry.



RN 421555-80-8 HCAPLUS

CN Cholan-24-oic acid, 3,7-bis(acetyloxy)-, 1,1-dimethylethyl ester,
(3 α ,5 β ,7 β) - (9CI) (CA INDEX NAME)

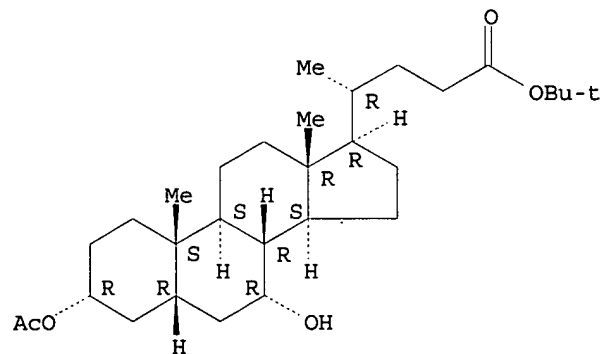
Absolute stereochemistry.



RN 455901-89-0 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-7-hydroxy-, 1,1-dimethylethyl
ester, (3 α ,5 β ,7 α) - (9CI) (CA INDEX NAME)

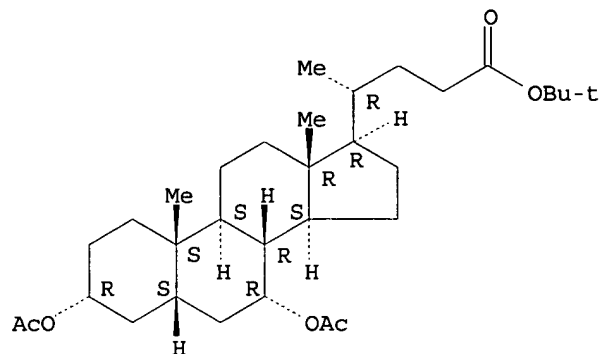
Absolute stereochemistry.



RN 455901-90-3 HCAPLUS

CN Cholan-24-oic acid, 3,7-bis(acetyloxy)-, 1,1-dimethylethyl ester,
(3 α ,5 β ,7 α) - (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IC ICM G03F007-039
ICS C08F222-04; C08F222-10; C08F222-38; C08F222-40; C08K005-00;
C08L035-00; C08L045-00; G03F007-004; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)
Section cross-reference(s): 38

ST pos **photoresist** far UV chem amplification; halftone
phase shift **mask pos photoresist**;
dissoln inhibitor far UV pos **photoresist**; imido
sulfonate photoacid generator UV **photoresist**

IT Positive **photoresists**
(UV; chemical amplified pos.-working far-UV **photoresists**
suitable for halftone phase-shift masks)

IT Cycloalkenes
RL: IMF (Industrial manufacture); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(polymers; chemical amplified pos.-working far-UV
photoresists suitable for halftone phase-shift masks)

IT 343629-51-6
RL: CAT (Catalyst use); USES (Uses)
(chemical amplified pos.-working far-UV **photoresists**
suitable for halftone phase-shift masks)

IT 301525-09-7P 301525-13-3P 301525-15-5P 301525-19-9P
312386-49-5P 312386-66-6P 391232-36-3P 398140-57-3P
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398141-04-3P 398141-05-4P 398141-06-5P 398141-07-6P
398141-10-1P 398141-11-2P 398141-13-4P 398141-14-5P
398152-52-8P 405509-30-0P 455901-72-1P 455901-73-2P
455901-74-3P 455901-75-4P 455901-76-5P 455901-77-6P
RL: IMF (Industrial manufacture); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(chemical amplified pos.-working far-UV **photoresists**
suitable for halftone phase-shift masks)

IT 50337-75-2 115298-62-9 122752-67-4 **130782-09-1**
142524-71-8 157692-53-0 169228-97-1 169965-90-6
172615-57-5 251365-72-7 251365-74-9 332136-74-0
399041-04-4 421555-75-1 421555-76-2 421555-77-3
421555-79-5 **421555-80-8** 455901-78-7

455901-79-8 455901-80-1 455901-81-2 455901-82-3
455901-83-4 455901-84-5 455901-85-6 455901-86-7
455901-87-8 455901-88-9 455901-89-0
455901-90-3

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(dissoln. inhibitor; chemical amplified pos.-working far-UV photoresists suitable for halftone phase-shift masks)

IT 34684-40-7 83697-56-7 83697-60-3 85342-62-7 133710-62-0
171417-91-7 179419-32-0 252937-66-9 307531-76-6
324771-13-3 398457-15-3 455901-91-4

RL: CAT (Catalyst use); USES (Uses)

(photoacid generator; chemical amplified pos.-working far-UV photoresists suitable for halftone phase-shift masks)

IT 144089-15-6 144317-44-2 177034-80-9 241806-75-7
258872-05-8 284474-28-8 338445-24-2 391232-40-9
398141-18-9 455901-93-6 455901-94-7 455901-95-8
455901-96-9 455901-98-1

RL: CAT (Catalyst use); USES (Uses)

(sulfonium photoacid generator; chemical amplified pos.-working far-UV photoresists suitable for halftone phase-shift masks)

L19 ANSWER 3 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002.347848 HCAPLUS

DOCUMENT NUMBER: 136:361828

TITLE: Positive-working photoresist compositions containing norbornene-acrylate copolymers

INVENTOR(S): Sato, Kenichiro; Nakao, Hajime

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 80 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

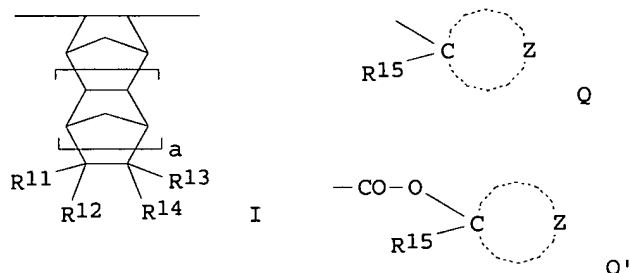
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002131917	A2	<u>2002</u> 0509	JP 2001-169802	2001 0605
TW 548521	B	<u>2003</u> 0821	TW 2001-90113799	2001 0607
PRIORITY APPLN. INFO.:			JP 2000-174037	A 2000 0609
			JP 2000-186431	A 2000 0621
			JP 2000-206812	A 2000 0707
			JP 2000-206890	A 2000 0707
			JP 2000-211414	A 2000 0712

JP 2000-215441 A
2000
0717

JP 2000-248658 A
2000
0818

OTHER SOURCE(S): MARPAT 136:361828
GI



AB The compns., which show wide defocus latitude, reduced line edge roughness, and high resolution, contain (A) resin which increases its solubility in alkaline developers upon reaction of acids and contain (a) a repeating unit I [R11-R14 = H, (un)substituted alkyl; a = 0, 1] and (b) CH₂CR1(AC02W) (R1 = H, Me; A = direct bond, alkylene, cycloalkylene, O, ether group, thioether group, O, ester group; W = Q, CR16R17R18, CHR20OR19, CR23R25CR21:CR22R24, R26R29CHR27COR28, Q1; R15 = Me, Et, Pr, CHMe2, Bu, CH2CMe2, CHMeEt; Z = atomic group required to form an alicyclic ring; R16-R20 = C1-4 linear or branched alkyl, alicyclyl; ≥1 of R16-R18, R19 or R20 = alicyclyl; R21-R25 = H, C1-4 linear or branched alkyl, alicyclyl; ≥1 R21-R25 = alicyclyl; R23 or R25 = C1-4 linear or branched alkyl, alicyclyl; R26-R29 = C1-4 linear or branched alkyl, alicyclyl; ≥1 of R26-R29 = alicyclyl), (B) compds. which generate acids upon irradiation of actinic ray or radiation, and optionally (C1) R[X(CR51CR52)qCO2R1]n (X = O, S, NR53, direct bond, R53 = H, alkyl; CO2R1 = acid-decomposable group; R = n-valent bridged hydrocarbon ring, saturated cyclic hydrocarbon ring, naphthalene ring; n = 1-4; q = 0-10), (C2) naphthalene derivs. II (R60 = alkyl, halo; OR61 = acid-decomposable group; m = 0-4; p = 1-4), or (C3) steroid compds. which contain ≥2 substituents having ≥1 carboxyl group protected with acid-labile group. The acid generators may be imide sulfonate compds. or diazodisulfonic acids (Markush structures are given) and optionally sulfonium salts. (C1)-(C3) work as dissoln. inhibitors and the compns. give high-resolution contact hole and trench patterns in fabrication of semiconductor devices.

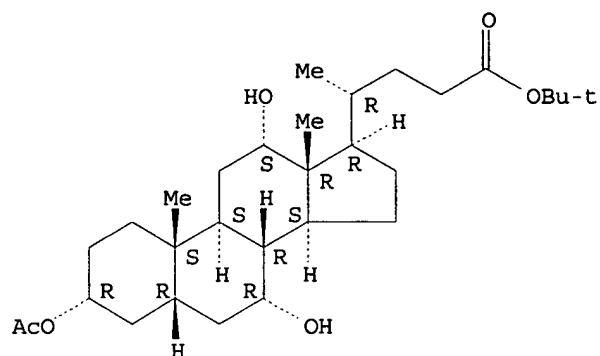
IT 130782-09-1 172615-57-5 421555-79-5
421555-80-8 421555-81-9

RL: TEM (Technical or engineered material use); USES (Uses)
(dissoln. inhibitor; pos.-working photoresist compns.
containing norbornene-acrylate copolymers)

RN 130782-09-1 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-7,12-dihydroxy-,
1,1-dimethylethyl ester, (3α,5β,7α,12α)-
(9CI) (CA INDEX NAME)

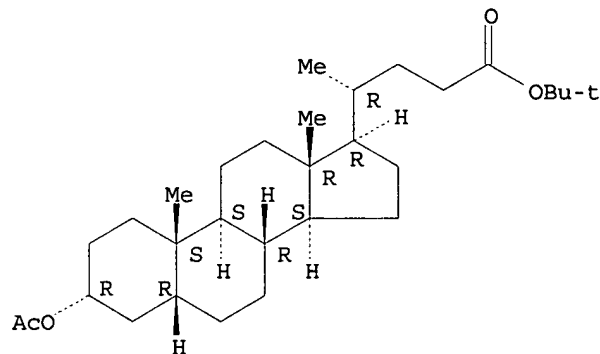
Absolute stereochemistry.



RN 172615-57-5 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-, 1,1-dimethylethyl ester,
(3 α ,5 β)- (9CI) (CA INDEX NAME)

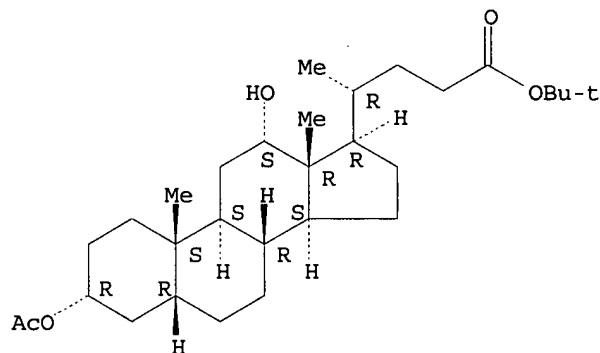
Absolute stereochemistry.



RN 421555-79-5 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-12-hydroxy-, 1,1-dimethylethyl
ester, (3 α ,5 β ,12 α)- (9CI) (CA INDEX NAME)

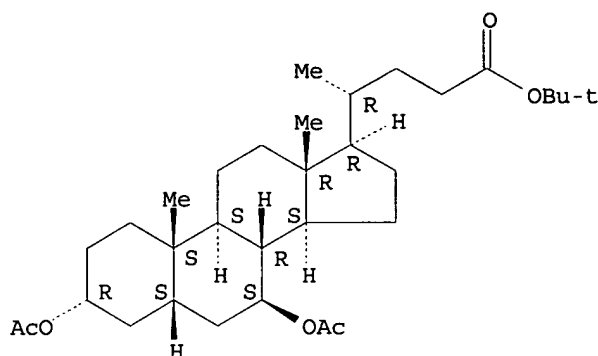
Absolute stereochemistry.



RN 421555-80-8 HCAPLUS

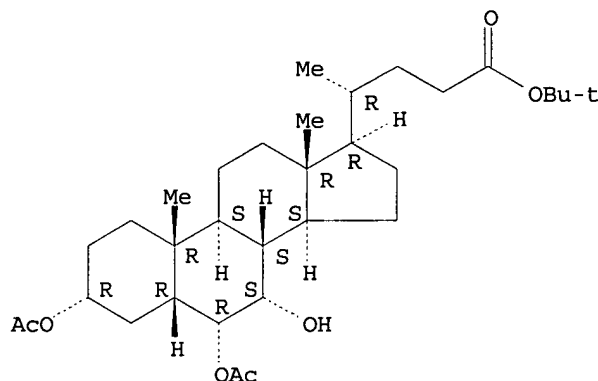
CN Cholan-24-oic acid, 3,7-bis(acetyloxy)-, 1,1-dimethylethyl ester,
(3 α ,5 β ,7 β)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



RN 421555-81-9 HCAPLUS
 CN Cholan-24-oic acid, 3,6-bis(acetyloxy)-7-hydroxy-,
 1,1-dimethylethyl ester, (3 α ,5 β ,6 α ,7 α)-
 (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IC ICM G03F007-039
 ICS C08F232-08; G03F007-004; H01L021-027
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)
 ST pos **photoresist** norbornene acrylate copolymer photoacid
 generator; dissoln inhibitor butyl deoxycholate glutaryl chloride
 copolymer
 IT Polysiloxanes, uses
 RL: MOA (Modifier or additive use); TEM (Technical or engineered
 material use); USES (Uses)
 (KP 341; pos.-working **photoresist** compns. containing
 norbornene-acrylate copolymers)
 IT Surfactants
 (fluorine-containing or silicones; pos.-working **photoresist**
 compns. containing norbornene-acrylate copolymers)
 IT Positive **photoresists**
 (pos.-working **photoresist** compns. containing
 norbornene-acrylate copolymers)
 IT Ketones, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (solvents; pos.-working **photoresist** compns. containing
 norbornene-acrylate copolymers)
 IT 24556-20-5 115298-62-9 115311-03-0 130782-09-1
 172615-57-5 207512-00-3 244634-41-1 343223-56-3
 421555-75-1 421555-76-2 421555-77-3 421555-78-4
 421555-79-5 421555-80-8 421555-81-9

421555-82-0 421555-83-1 421555-84-2

RL: TEM (Technical or engineered material use); USES (Uses)
(dissoln. inhibitor; pos.-working **photoresist** compns.
containing norbornene-acrylate copolymers)

IT 321994-64-3P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(oligomeric, dissoln. inhibitor; pos.-working
photoresist compns. containing norbornene-acrylate
copolymers)

IT 14159-45-6 28343-24-0 66003-78-9 81416-37-7 116808-67-4

138529-81-4 138529-84-7 138529-87-0 144089-15-6

144317-44-2 145612-66-4 153698-46-5 153698-67-0

157089-26-4 171417-91-7 177786-96-8 177786-98-0

179419-32-0 211517-08-7 241806-75-7 252937-66-9

258341-98-9 258341-99-0 258342-00-6 258872-05-8

260061-58-3 270563-93-4 284474-28-8 301525-08-6

307976-40-5 312386-77-9 324771-13-3 338445-26-4

338445-30-0 341979-02-0 343629-55-0 350249-87-5

391232-40-9 421555-68-2 421555-69-3 421555-70-6

421555-71-7 421555-72-8 421555-73-9 421555-74-0

RL: CAT (Catalyst use); TEM (Technical or engineered material
use); USES (Uses)

(photoacid generator; pos.-working **photoresist**
compns. containing norbornene-acrylate copolymers)

IT 249562-07-0P 249562-17-2P, Maleic anhydride-2-methyl-2-adamantyl

acrylate-norbornene copolymer 260448-02-0P, tert-Butyl

acrylate-maleic anhydride-norbornene copolymer 351867-96-4P

421555-57-9P 421555-59-1P 421555-60-4P 421555-61-5P

421555-62-6P 421555-63-7P 421555-64-8P 421555-65-9P

421555-66-0P 421555-67-1P

RL: IMF (Industrial manufacture); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)

(pos.-working **photoresist** compns. containing
norbornene-acrylate copolymers)

IT 484-47-9, 2,4,5-Triphenylimidazole 1122-58-3 6674-22-2, DBU

137462-24-9, Megafac F176 216679-67-3, Megafac R08

RL: MOA (Modifier or additive use); TEM (Technical or engineered
material use); USES (Uses)

(pos.-working **photoresist** compns. containing
norbornene-acrylate copolymers)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate

97-64-3, Ethyl lactate 108-32-7, Propylene carbonate 110-43-0,

2-Heptanone 123-86-4, Butyl acetate 763-69-9 1320-67-8,

Propylene glycol monomethyl ether 84540-57-8, Propylene glycol

monomethyl ether acetate 98516-33-7, Propylene glycol monomethyl

ether propionate

RL: TEM (Technical or engineered material use); USES (Uses)

(solvent; pos.-working **photoresist** compns. containing
norbornene-acrylate copolymers)

L19 ANSWER 4 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:99058 HCAPLUS

DOCUMENT NUMBER: 136:158842

TITLE: Additive for providing suitable property in
photoresist flow step

INVENTOR(S): Chung, Min Ho; Hong, Sung Eun; Chung, Jae
Chang; Paek, Ki Ho

PATENT ASSIGNEE(S): Hynix Semiconductor Co., Ltd., S. Korea

SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

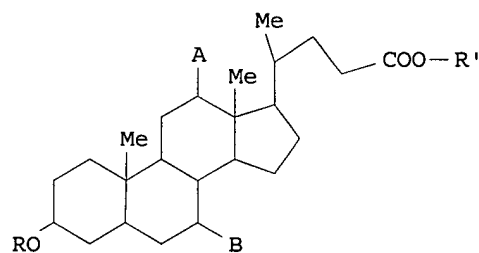
PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 2002040635	A2	20020206	JP 2001-182448	2001 0615
KR 2001112765	A	20011222	KR 2000-32984	2000 0615
US 2002022197	A1	20020221	US 2001-878803	2001 0611
US 6770414 TW 583502	B2 B	20040803 20040411	TW 2001-90114387	2001 0614
US 2004166437	A1	20040826	US 2004-789055	2004 0227
PRIORITY APPLN. INFO.:			KR 2000-32984	A 2000 0615
			US 2001-878803	A3 2001 0611

PAES
APP

D.P. ?

→ No

OTHER SOURCE(S): MARPAT 136:158842
GI



I

AB The additive having a low glass transition temperature is added to a **photoresist** composition containing a polymer having a high-glass transition temperature to provide smooth **photoresist** flow. The additive is represented by I (A = H, substituent; B = H, substituent; R, R' = C1-10 alkyl, alkoxyalkyl, alkylcarbonyl, etc.).

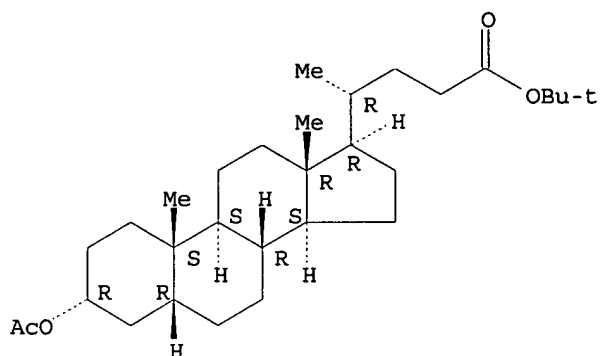
IT 172615-57-5P 395666-20-3P 395666-21-4P
395666-22-5P 395666-23-6P 395666-24-7P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(additive for providing suitable property in **photoresist** flow step)

RN 172615-57-5 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-, 1,1-dimethylethyl ester,
(3 α ,5 β)- (9CI) (CA INDEX NAME)

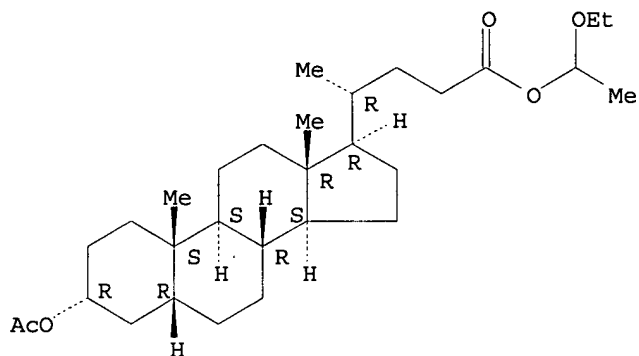
Absolute stereochemistry.



RN 395666-20-3 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-, 1-ethoxyethyl ester,
(3 α ,5 β)- (9CI) (CA INDEX NAME)

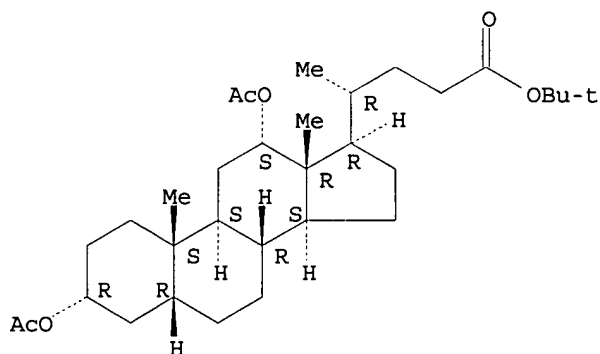
Absolute stereochemistry.



RN 395666-21-4 HCAPLUS

CN Cholan-24-oic acid, 3,12-bis(acetyloxy)-, 1,1-dimethylethyl ester,
(3 α ,5 β ,12 α)- (9CI) (CA INDEX NAME)

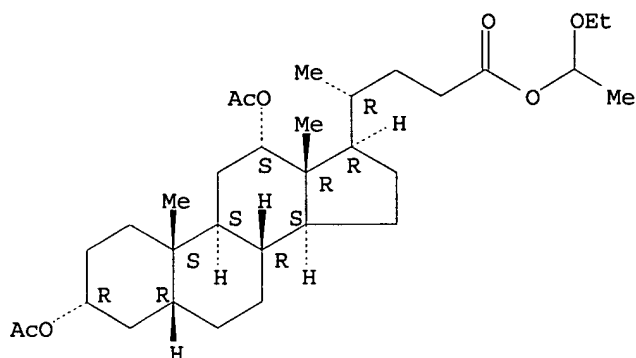
Absolute stereochemistry.



RN 395666-22-5 HCAPLUS

CN Cholan-24-oic acid, 3,12-bis(acetyloxy)-, 1-ethoxyethyl ester,
(3 α ,5 β ,12 α)- (9CI) (CA INDEX NAME)

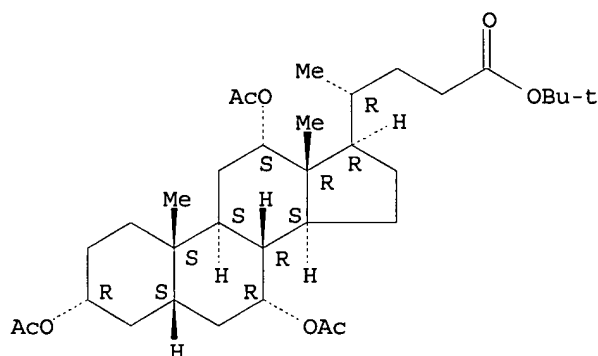
Absolute stereochemistry.



RN 395666-23-6 HCAPLUS

CN Cholan-24-oic acid, 3,7,12-tris(acetyloxy)-, 1,1-dimethylethyl ester, (3 α ,5 β ,7 α ,12 α)- (9CI) (CA INDEX NAME)

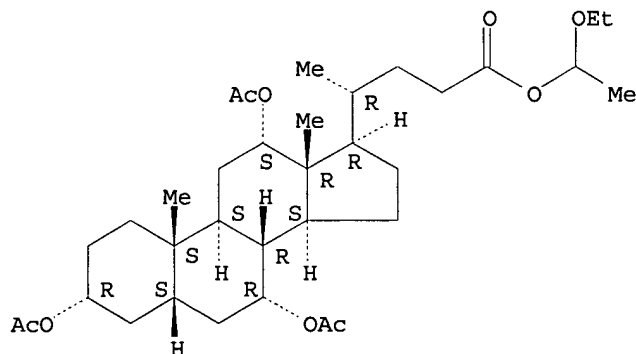
Absolute stereochemistry.



RN 395666-24-7 HCAPLUS

CN Cholan-24-oic acid, 3,7,12-tris(acetyloxy)-, 1-ethoxyethyl ester, (3 α ,5 β ,7 α ,12 α)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IC ICM G03F007-004

ICS C08F222-06; G03F007-039; G03F007-40; H01L021-027; C08F232-04

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35, 38

ST photoresist additive

IT Photoresists

(additive for providing suitable property in
photoresist flow step)

IT 75-65-0, tert-Butyl alcohol, reactions 109-92-2, Ethylvinyl
ether 434-13-9, Lithocholic acid

RL: RCT (Reactant); RACT (Reactant or reagent)
(additive for providing suitable property in
photoresist flow step)

IT 4057-84-5P 33628-48-7P 52840-09-2P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)

(additive for providing suitable property in
photoresist flow step)

IT 172615-57-5P 395666-20-3P 395666-21-4P

395666-22-5P 395666-23-6P 395666-24-7P

RL: SPN (Synthetic preparation); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)

(additive for providing suitable property in
photoresist flow step)

IT 210040-28-1P, tert-Butyl-5-norbornene-2-carboxylate-2-hydroxyethyl-
5-norbornene-2-carboxylate-maleic anhydride-5-norbornene-2-
carboxylic acid copolymer 221172-15-2P 253157-23-2P,
tert-Butyl-5-norbornene-2-carboxylate-3-hydroxypropyl-5-norbornene-
2-carboxylate-maleic anhydride-5-norbornene-2-carboxylic acid
copolymer

RL: SPN (Synthetic preparation); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)

(photoresist from)

L19 ANSWER 5 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:686024 HCAPLUS

DOCUMENT NUMBER: 133:274240

TITLE: Acid-catalyzed positive-working
photoresist compositions containing
cyclic olefin polymers and hydrophobic
nonsteroidal alicyclic or saturated steroidal
additives.

INVENTOR(S): Varanasi, Pushkara Rao; Maniscalco, Joseph F.;
Lawson, Margaret C.; Mewherter, Ann Marie;
Jordhamo, George M.; Allen, Robert D.; Opitz,
Julian; Ito, Hiroshi; Wallow, Thomas I.; De
Pietro, Richard A.

PATENT ASSIGNEE(S): International Business Machines Corp., USA

SOURCE: Ger. Offen., 18 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
DE 10009183	A1	20000928	DE 2000-10009183	2000 0226
<u>US 6124074</u>	A	<u>20000926</u>	US 1999-266341	1999 0311
CN 1267000	A	20000920	CN 2000-101840	2000 0202
CN 1272637	A	20001108	CN 2000-101839	2000

CN 1267001	A	20000920	CN 2000-101869	0202
				2000
				0204
SG 90720	A1	20020820	SG 2000-1282	2000
				0309
PRIORITY APPLN. INFO.:		US 1999-266341	A	1999
				0311
		US 1999-266342	A	1999
				0311
		US 1999-266343	A	1999
				0311
		US 1999-266344	A	1999
				0311

AB The title compns., which are used for exposure with radiation of 193 nm, are composed of cyclic olefin polymers; a photosensitive acid-generating compound; a bulky hydrophobic additive, which is essentially transparent to 193 nm radiation; and a compound selected from a hydrophobic, nonsteroidal, alicyclic component; a hydrophobic, nonsteroidal, multi-alicyclic component, which contains a number of acid-labile groups; and a saturated steroid. The compns. are developable in alkali solution and give **photoresist** structures having a high resolution and excellent resistance to etching. Thus, a typical composition containing propylene glycol monomethy ether acetate 38, a norbornenecarboxylic acid-tert-Bu norbenecarboxylate copolymer 4, di-tert-butylphenyliodonium perfluorooctanesulfonate 0.16, tetrabutylammonium hydroxide 0.008 weight% was coated on a Si wafer, dried, exposed to 193 nm radiation in a stepper, heat-treated and developed to give a high-resolution image.

IT 172615-57-5

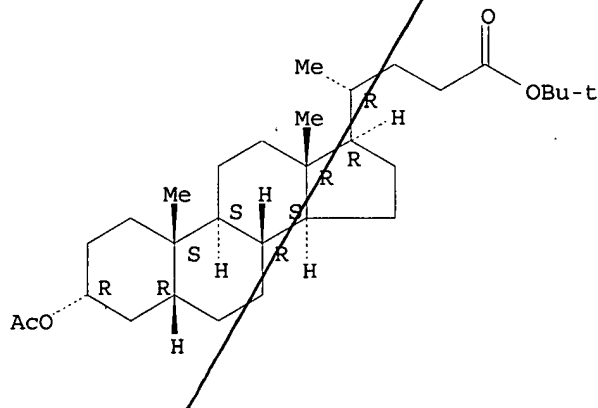
RL: TEM (Technical or engineered material use); USES (Uses)
(acid-catalyzed pos.-working **photoresist** compns.

containing cyclic olefin polymers and hydrophobic nonsteroidal alicyclic or saturated steroidal additives)

RN 172615-57-5 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-, 1,1-dimethylethyl ester,
(3 α ,5 β)-(9CI) (CA INDEX NAME)

Absolute stereochemistry.



IC ICM G03F007-039
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 ST pos **photoresist** cyclic olefin polymer alicyclic compd steroid
 IT Positive **photoresists**
 (acid-catalyzed; **photoresist** compns. containing cyclic olefin polymers and hydrophobic nonsteroidal alicyclic or saturated steroidal additives)
 IT 24556-20-5, Tert-Butyl adamantane-1-carboxylate 122752-67-4, tert-Butyl cholate 129532-67-8 157692-53-0, tert-Butyl deoxycholate 169965-90-6, tert-Butyl lithocholate 172615-57-5 174215-72-6 296242-01-8 298222-03-4 298222-05-6 298222-06-7 298222-07-8
 RL: TEM (Technical or engineered material use); USES (Uses)
 (acid-catalyzed pos.-working **photoresist** compns. containing cyclic olefin polymers and hydrophobic nonsteroidal alicyclic or saturated steroidal additives)
 IT 75-65-0, tert-Butyl alcohol, reactions 110-03-2, 2,5-Dimethyl-2,5-hexanediol 2094-72-6, Adamantane-1-carbonyl chloride
 RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
 (esterification; acid-catalyzed pos.-working **photoresist** compns. containing cyclic olefin polymers and hydrophobic nonsteroidal alicyclic or saturated steroidal additives)

L19 ANSWER 6 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1999:752380 HCAPLUS
 DOCUMENT NUMBER: 132:17146
 TITLE: Far-UV-sensitive positive-working **photoresist** composition having functionalized acrylate polymer
 INVENTOR(S): Sato, Kenichiro; Aogo, Toshiaki
 PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 87 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11327148	A2	19991126	JP 1999-66682	1999 0312
PRIORITY APPLN. INFO.:			JP 1998-61478	A 1998 0312

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT
 *

AB The far-UV-sensitive pos.-working **photoresist** composition has (A) an active-ray sensitive acid-generating compound, (B) a resin containing a monovalent polycyclic aliphatic ring group I (R1-3 = alkyl, cycloalkyl, alkenyl, etc.; m2, m, n = 0, 1-5 integer) and an acid-sensitive alkali- solubility increasing group, and a compound II(X

= O, S, N(R53)- ; R51-53 = H, alkyl; R' = acid-sensitive group; R = bridged hydrocarbon, naphthalene ring; n1 = 1-4 integer; q1 = 0-10 integer) or III (R60 = H, alkyl; R61 = acid-sensitive group; m1, p1 = 1-4 integer). The **photoresist** composition provides the excellent sensitivity, the high resolution, and the excellent pattern characteristics.

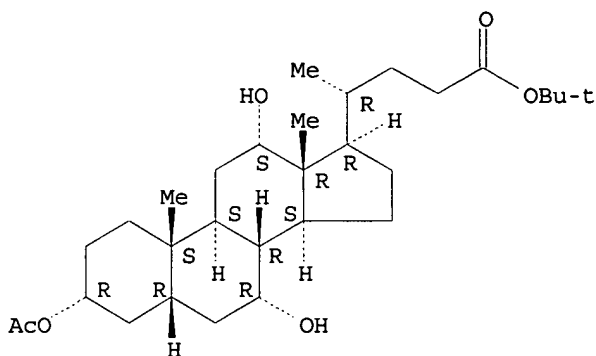
IT 130782-09-1

RL: TEM (Technical or engineered material use); USES (Uses)
(far-UV-sensitive pos.-working **photoresist** composition
having functionalized acrylate polymer)

RN 130782-09-1 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-7,12-dihydroxy-,
1,1-dimethylethyl ester, (3 α ,5 β ,7 α ,12 α)-
(9CI) (CA INDEX NAME)

Absolute stereochemistry.



IC ICM G03F007-039

ICS G03F007-004; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)
Section cross-reference(s): 35

ST far UV pos **photoresist** compn acrylate polymer

IT Positive **photoresists**

(far-UV-sensitive pos.-working **photoresist** composition
having functionalized acrylate polymer)

IT Acrylic polymers, preparation

RL: PNU (Preparation, unclassified); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(far-UV-sensitive pos.-working **photoresist** composition
having functionalized acrylate polymer)

IT 251365-67-0P 251365-69-2P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(ar-UV-sensitive pos.-working **photoresist** composition
having functionalized acrylate polymer)

IT 244176-33-8P 250598-43-7P

RL: PNU (Preparation, unclassified); RCT (Reactant); PREP
(Preparation); RACT (Reactant or reagent)
(far-UV-sensitive pos.-working **photoresist** composition
having functionalized acrylate polymer)

IT 251365-65-8P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(far-UV-sensitive pos.-working **photoresist** composition
having functionalized acrylate polymer)

IT 79-10-7, 2-Propenoic acid, reactions 79-41-4, Methacrylic acid,
reactions 83-44-3, Deoxycholic acid

RL: RCT (Reactant); RACT (Reactant or reagent)
(far-UV-sensitive pos.-working **photoresist** composition)

having functionalized acrylate polymer)

IT 24556-20-5 **130782-09-1** 156301-83-6 169228-97-1
 195057-82-0 244176-34-9 251365-70-5 251365-71-6
 251365-72-7 251365-73-8 251365-74-9 251365-75-0
 RL: TEM (Technical or engineered material use); USES (Uses)
 (far-UV-sensitive pos.-working **photoresist** composition
 having functionalized acrylate polymer)

L19 ANSWER 7 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:631733 HCAPLUS

DOCUMENT NUMBER: 127:313043

TITLE: Synthesis of Cycloolefin-Maleic Anhydride
 Alternating Copolymers for 193 nm Imaging

AUTHOR(S): Houlihan, F. M.; Wallow, T. I.; Nalamasu, O.;
 Reichmanis, E.

CORPORATE SOURCE: Lucent Technologies, Bell Laboratories, Murray
 Hill, NJ, 07974, USA

SOURCE: Macromolecules (1997), 30(21), 6517-6524
 CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A series of novel cycloolefin-maleic anhydride copolymers have
 been prepared and evaluated for 193 nm imaging applications. Free
 radical induced copolymn. of norbornene and maleic anhydride
 affords a hydrolytically robust alternating copolymer. Aqueous base
 solubility can be induced via incorporation of acrylic acid and/or
 acrylate esters that can be cleaved to afford the parent acid via
 acidolysis. The proportion of acrylate in the resulting
 terpolymers is a linear function of the starting monomer ratio.
 These terpolymers are thermally stable and hydrolytically robust.
 Due to their aqueous base solubility and UV transparency, they have
 potential in high resolution imaging applications. Sub-0.18 μm
 imaging has been demonstrated upon 193 nm imagewise exposure of
 selected materials.

IT **172615-57-5**

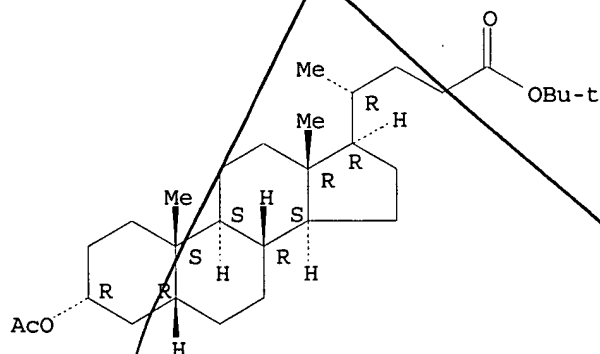
RL: NUU (Other use, unclassified); USES (Uses)

(dissoln. inhibitor; preparation and lithog. evaluation of novel
 cycloolefin-maleic anhydride copolymers for **photoresist**
 imaging)

RN 172615-57-5 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-, 1,1-dimethylethyl ester,
 (3 α ,5 β)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)

Section cross-reference(s): 35

ST cycloolefin maleic anhydride copolymer imaging photolithog;

- photoresist** cycloolefin maleic anhydride copolymer
 IT Cycloalkenes
 RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses) (polymers; preparation and lithog. evaluation of novel cycloolefin-maleic anhydride copolymers for **photoresist** imaging)
- IT **Photoresists**
 (preparation and lithog. evaluation of novel cycloolefin-maleic anhydride copolymers for **photoresist** imaging)
- IT 172615-57-5
 RL: NUU (Other use, unclassified); USES (Uses) (dissoln. inhibitor; preparation and lithog. evaluation of novel cycloolefin-maleic anhydride copolymers for **photoresist** imaging)
- IT 157692-53-0P, tert-Butyl deoxycholate 169965-90-6P, tert-Butyl lithocholate
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (dissoln. inhibitor; preparation and lithog. evaluation of novel cycloolefin-maleic anhydride copolymers for **photoresist** imaging)
- IT 197439-77-3P
 RL: BYP (Byproduct); PREP (Preparation) (lithog. evaluation of novel cycloolefin-maleic anhydride copolymer **photoresists**)
- IT 111-78-4, 1,5-Cyclooctadiene 3760-14-3, 1,5-Dimethyl-1,5-cyclooctadiene 19111-23-0, 1,5,9-Cyclodecatriene
 RL: RCT (Reactant); RACT (Reactant or reagent) (lithog. evaluation of novel cycloolefin-maleic anhydride copolymer **photoresists**)
- IT 57900-42-2, Triphenylsulfonium hexafluoroarsenate 66003-78-9, Triphenylsulfonium triflate
 RL: TEM (Technical or engineered material use); USES (Uses) (lithog. evaluation of novel cycloolefin-maleic anhydride copolymer **photoresists**)
- IT 78-67-1, AIBN
 RL: CAT (Catalyst use); USES (Uses) (preparation and lithog. evaluation of novel cycloolefin-maleic anhydride copolymers for **photoresist** imaging)
- IT 75-59-2, Tetramethylammonium hydroxide
 RL: NUU (Other use, unclassified); USES (Uses) (preparation and lithog. evaluation of novel cycloolefin-maleic anhydride copolymers for **photoresist** imaging)
- IT 25212-41-3P, 1,5-Cyclooctadiene-maleic anhydride copolymer 26678-74-0DP, Maleic anhydride-norbornene copolymer, hydrolyzed 26678-74-0P, Maleic anhydride-norbornene copolymer 30607-66-0P 188885-53-2P, Acrylic acid-maleic anhydride-norbornene copolymer 195143-37-4P, Acrylic acid-tert-butyl acrylate-maleic anhydride-norbornene copolymer 197439-75-1P
 RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses) (preparation and lithog. evaluation of novel cycloolefin-maleic anhydride copolymers for **photoresist** imaging)
- IT 79-10-7, 2-Propenoic acid, reactions 108-31-6, 2,5-Furandione, reactions 498-66-8, Bicyclo[2.2.1]hept-2-ene 1663-39-4, tert-Butyl acrylate
 RL: RCT (Reactant); RACT (Reactant or reagent) (preparation and lithog. evaluation of novel cycloolefin-maleic anhydride copolymers for **photoresist** imaging)
- IT 146915-07-3P 197439-76-2P
 RL: SPN (Synthetic preparation); PREP (Preparation) (preparation and lithog. evaluation of novel cycloolefin-maleic anhydride copolymers for **photoresist** imaging)

REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L19 ANSWER 8 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:522737 HCAPLUS

DOCUMENT NUMBER: 127:240842

TITLE: Recent advances in 193 nm single-layer
photoresists based on alternating
copolymers of cycloolefins

AUTHOR(S): Houlihan, F. M.; Wallow, T.; Timko, A.; Neria,
E.; Hutton, R.; Cirelli, R.; Nalamasu, O.;
Reichmanis, E.

CORPORATE SOURCE: Bell Labs., Lucent Technols., Murray Hill, NJ,
USA

SOURCE: Proceedings of SPIE-The International Society
for Optical Engineering (1997), 3049(Advances
in Resist Technology and Processing XIV),
84-91

CODEN: PSISDG; ISSN: 0277-786X

PUBLISHER: SPIE-The International Society for Optical
Engineering

DOCUMENT TYPE: Journal

LANGUAGE: English

AB We report on our recent investigations on the formulation and
processing of 193 nm single layer **photoresists** based on
alternating copolymers of cycloolefins with maleic anhydride.
Resists formulated with cycloolefin copolymers are
compatible with 0.262 N tetramethylammonium developers, have
excellent adhesion, sensitivity, etch resistance and thermal flow
properties. The effect of polymer structure and composition, dissoln.
inhibitor structure and loading as well as the effect of the
photoacid generator on the **resist** dissoln. properties
was investigated. Based on the results high contrast formulations
were evaluated on a GCA XLS (NA=0.53, 4X reduction optics) deep-UV
stepper to exhibit 0.27 μ m L/S pair resolution with excellent
photosensitivity. Based on the dissoln. properties and a
spectroscopic examination of the **resist**, we have designed
materials that show < 0.17 μ m L/S pair resolution with 193 nm
exposures. In this paper, the formulation methodol. will be
detailed and the most recent results upon both with 248 and 193 nm
irradiation will be described.

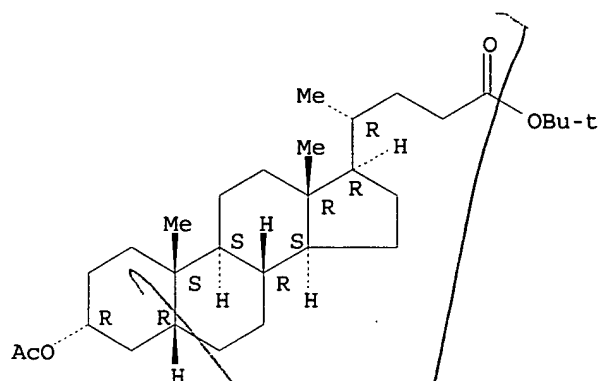
IT 172615-57-5 172615-57-5D, polyester derivs. with
difunctional acid or acid halides

RL: TEM (Technical or engineered material use); USES (Uses)
(dissoln. inhibitor; recent advances in 193 nm single-layer
photoresists based on alternating copolymers of
cycloolefins)

RN 172615-57-5 HCAPLUS

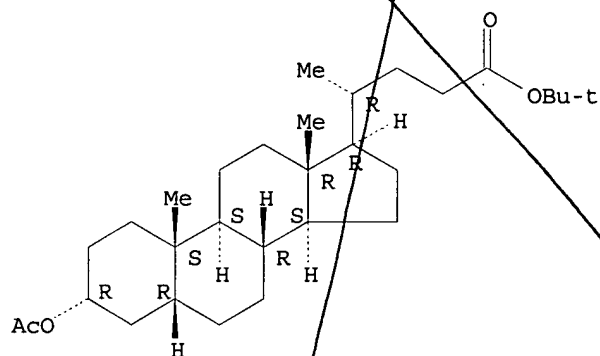
CN Cholan-24-oic acid, 3-(acetyloxy)-, 1,1-dimethylethyl ester,
(3 α ,5 β)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



RN 172615-57-5 NCAPLUS
 CN Cholan-24-oic acid, 3-(acetyloxy)-, 1,1-dimethylethyl ester,
 (3α,5β)-(9CI) (CA INDEX NAME)

Absolute stereochemistry.



- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 38
- ST cycloolefin norbornene dissoln inhibition alternating copolymer;
 deep UV **photoresist** submicron photolithog
- IT **Photoresists**
 (UV; recent advances in 193 nm single-layer **photoresists** based on alternating copolymers of cycloolefins)
- IT Polyesters, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (dissoln. inhibitor; recent advances in 193 nm single-layer **photoresists** based on alternating copolymers of cycloolefins)
- IT Photolithography
 (submicron UV; recent advances in 193 nm single-layer **photoresists** based on alternating copolymers of cycloolefins)
- IT 122752-67-4 122752-67-4D, polyester derivs. with difunctional acid or acid halides 157692-53-0 157692-53-0D, polyester derivs. with difunctional acid or acid halides 169965-90-6 169965-90-6D, polyester derivs. with difunctional acid or acid halides **172615-57-5 172615-57-5D**, polyester derivs. with difunctional acid or acid halides
 RL: TEM (Technical or engineered material use); USES (Uses)
 (dissoln. inhibitor; recent advances in 193 nm single-layer **photoresists** based on alternating copolymers of

cycloolefins)

IT 57900-42-2, Triphenylsulfonium hexafluoroarsenate 66003-76-7, Diphenyliodonium triflate 66003-78-9, Triphenylsulfonium triflate 194999-85-4, Bis-(4-t-butylphenyl)iodoniumnonaflate
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; recent advances in 193 nm single-layer **photoresists** based on alternating copolymers of cycloolefins)

IT 188885-53-2 195143-37-4
RL: TEM (Technical or engineered material use); USES (Uses)
(recent advances in 193 nm single-layer **photoresists** based on alternating copolymers of cycloolefins)

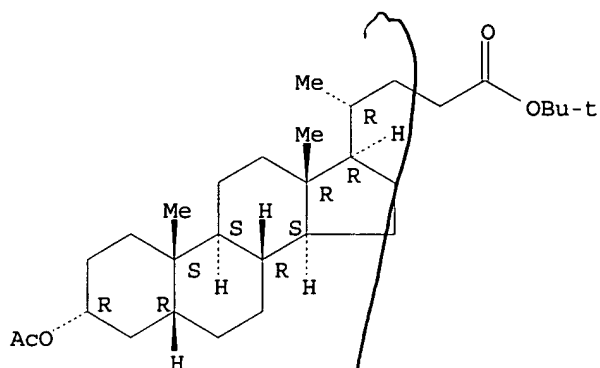
L19 ANSWER 9 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1997:471410 HCAPLUS
DOCUMENT NUMBER: 127:227302
TITLE: A commercially viable 193 nm single layer **resist** platform
AUTHOR(S): Houlihan, F. M.; Wallow, T.; Timko, A.; Neria, E.; Hutton, R.; Cirelli, R.; Kometani, J. M.; Nalamasu, O.; Reichmanis, E.
CORPORATE SOURCE: Bell Laboratories, Lucent Technologies, Murray Hill, NJ, USA
SOURCE: Journal of Photopolymer Science and Technology (1997), 10(3), 511-520
CODEN: JSTEEW; ISSN: 0914-9244
PUBLISHER: Technical Association of Photopolymers, Japan
DOCUMENT TYPE: Journal
LANGUAGE: English

AB We report on our recent investigations on the formulation and processing of 193 nm single layer **photoresists** based on alternating copolymers of cycloolefins with maleic anhydride. **Resists** formulated with cycloolefin copolymers are compatible with 0.262 N tetramethylammonium developers, have excellent adhesion, sensitivity, etch resistance and thermal flow properties. The effect of polymer structure and composition, dissoln. inhibitor structure and loading as well as the effect of the photoacid generator on the **resist** dissoln. properties was investigated. Based on the results high contrast formulations were evaluated on a GCA XLS (NA=0.53, 4X reduction optics) deep-UV stepper to exhibit 0.27 μm L/S pair resolution with excellent photosensitivity. Based on the dissoln. properties and a spectroscopic examination of the **resist**, we have designed materials that show <0.17 μm L/S pair resolution with 193 nm exposure on a ISI tool (NA=0.60, 10X reduction optics). In this paper, the formulation methodol. will be detailed and the most recent results upon both with 248 and 193 nm irradiation will be described.

IT 172615-57-5
RL: TEM (Technical or engineered material use); USES (Uses)
(monomeric dissoln. inhibitor in high contrast deep UV **photoresist** composition)

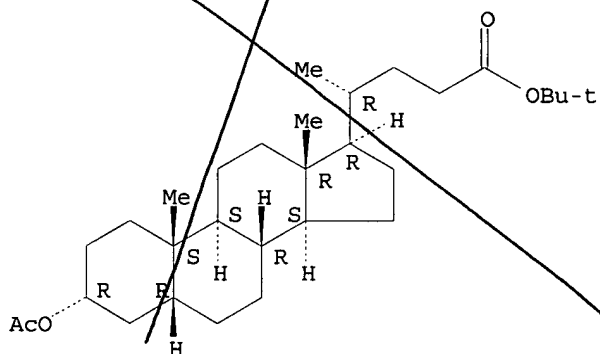
RN 172615-57-5 HCAPLUS
CN Cholan-24-oic acid, 3-(acetyloxy)-, 1,1-dimethylethyl ester, (3 α ,5 β)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IT 172615-57-5D, condensation polymer with difunctional acid or acid halide
 RL: TEM (Technical or engineered material use); USES (Uses) (polymeric dissoln. inhibitor in high contrast deep UV photoresist composition)
 RN 172615-57-5 HCAPLUS
 CN Cholan-24-oic acid, 3-(acetyloxy)-, 1,1-dimethylethyl ester, (3α,5β) - (9CI) (CA INDEX NAME)

Absolute stereochemistry.



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 38, 76
 ST cycloolefin norbornene maleic anhydride dissoln inhibition; deep UV photolithog etch resistance **photoresist**
 IT **Photoresists**
 (UV; com. viable 193 nm single layer **resist** platform)
 IT Semiconductor devices
 (com. viable 193 nm single layer **resist** platform)
 IT Photolithography
 (submicron UV; com. viable 193 nm single layer **resist** platform)
 IT 122752-67-4 157692-53-0 169965-90-6 172615-57-5
 RL: TEM (Technical or engineered material use); USES (Uses) (monomeric dissoln. inhibitor in high contrast deep UV photoresist composition)
 IT 194999-82-1P, Diphenyliodonium nonaflate
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (photoacid generator in high contrast deep UV photoresist composition)
 IT 57900-42-2, Triphenylsulfonium hexafluoroarsenate 66003-76-7,

Diphenyliodonium triflate 66003-78-9, Triphenylsulfonium triflate 194999-85-4, Bis(4-t-butylphenyl)iodoniumnonaflate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (photoacid generator in high contrast deep UV
photoresist composition)

IT 194999-89-8 194999-90-1

RL: TEM (Technical or engineered material use); USES (Uses)
 (polymer component of high contrast deep UV **photoresist**
 composition)

IT 122752-67-4D, condensation polymer with difunctional acid or acid
 halide 157692-53-0D, condensation polymer with difunctional acid
 or acid halide 169965-90-6D, condensation polymer with
 difunctional acid or acid halide 172615-57-5D,
 condensation polymer with difunctional acid or acid halide
 RL: TEM (Technical or engineered material use); USES (Uses)
 (polymeric dissoln. inhibitor in high contrast deep UV
photoresist composition)

L19 ANSWER 10 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:147774 HCAPLUS

DOCUMENT NUMBER: 124:189530

TITLE: **Photoresist** composition for deep
 ultraviolet radiation and process for its use

INVENTOR(S): Allen, Robert David; DiPietro, Richard
 Anthony; Wallraff, Gregory Michael

PATENT ASSIGNEE(S): International Business Machines Corp., USA

SOURCE: Eur. Pat. Appl., 6 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 690348	A2	19960103	EP 1995-109773	1995 0623
EP 690348	A3	19960515		
R: DE, FR, GB				
US 5580694	A	19961203	US 1994-266044	1994 0627
JP 08015865	A2	19960119	JP 1995-128606	1995 0526
JP 3243778	B2	20020107		
US 5786131	A	19980728	US 1996-678868	1996 0712
				1994 0627

EP 690348

A2

19960103

EP 1995-109773

1995
0623

EP 690348

A3

19960515

R: DE, FR, GB

US 5580694

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JP 08015865

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US 1996-678868

1996
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PRIORITY APPLN. INFO.:

US 1994-266044

A

1994
0627

OTHER SOURCE(S): MARPAT 124:189530

AB The present invention relates to a radiation.-sensitive
resist composition comprising (a) a radiation.-sensitive acid
 generator, (b) a androstane derivative, and (c) a copolymer binder.

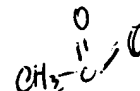
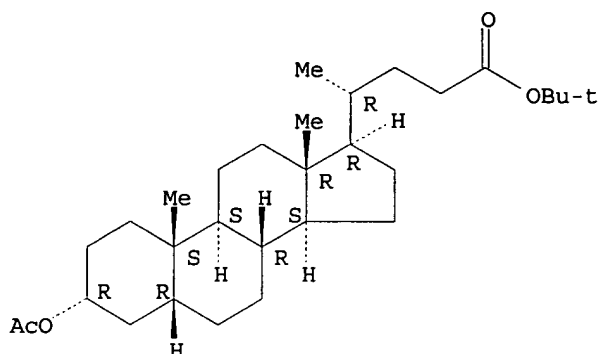
IT 172615-57-5

RL: TEM (Technical or engineered material use); USES (Uses)
 (deep-UV **photoresists** containing)

RN 172615-57-5 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-, 1,1-dimethylethyl ester,
 (3 α ,5 β)-(9CI) (CA INDEX NAME)

Absolute stereochemistry.



IC ICM G03F007-004
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 ST UV **photoresist** androstane acid generator
 IT **Resists**
 (photo-, deep-UV; containing photosensitive acid generators, androstane derivs., and copolymer binders)
 IT 72145-62-1, tert-Butyl methacrylate-methacrylic acid-methyl methacrylate copolymer 122752-67-4, tert-Butylcholate 148441-54-7 169965-89-3, tert-Butyl methacrylate-isobornyl methacrylate-methacrylic acid-methyl methacrylate copolymer 172615-57-5 174215-72-6
 RL: TEM (Technical or engineered material use); USES (Uses) (deep-UV **photoresists** containing)

L19 ANSWER 11 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1995:1002094 HCAPLUS
 DOCUMENT NUMBER: 124:101673
 TITLE: Design considerations for 193-nm **positive resists**
 AUTHOR(S): Allen, Robert D.; Wan, I. Y.; Wallraff, Gregory M.; DiPietro, Richard A.; Hofer, Donald C.; Kunz, Roderick R.
 CORPORATE SOURCE: IBM Almaden Research Center, San Jose, CA, 95120-6099, USA
 SOURCE: ACS Symposium Series (1995), 614 (Microelectronics Technology), 255-70
 CODEN: ACSMC8; ISSN: 0097-6156
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Our approach to the design of pos., single layer **resists** for 193 nm lithog. will be discussed. Phenolic resins, the archetype in pos. **photoresist** materials, cannot be used as this wavelength due to optical opacity. Acrylic polymers combine the required optical transparency at 193 nm with easily tailored properties. With a design based on methacrylate terpolymers, we have recently developed a high resolution **pos. resist** for 193 nm lithog. with good imaging at both 193 and 248 nm. Our work has centered on gaining further insight into methacrylate polymer structure/property relationships, improving the imaging performance and finally increasing the etch resistance. Towards that end, we have employed a class of dissoln. inhibitors for 193 nm **resists** that are combined with methacrylate polymers to provide 3-component **resists**. A family of 5 β -steroid dissoln. inhibitors that also increase etch resistance will be described. Imaging and etch performance of these **resists** will be disclosed, with

particular emphasis on the impact of these steroid dissoln. inhibitors on the thermal properties of the **resist**. These methacrylate chemical amplified **resists** show resolution capability below 0.25 μ , etch rates 20% higher than novolak resins, and dual wavelength (193/248 nm) imaging.

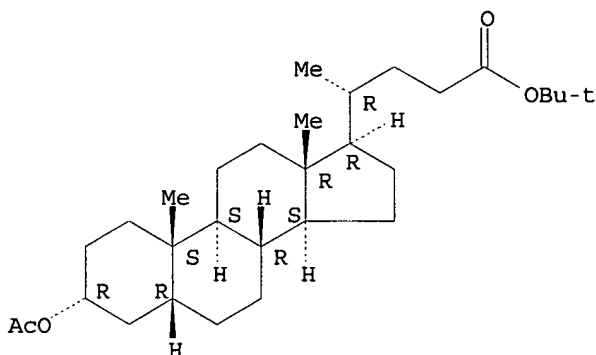
IT 172615-57-5

RL: TEM (Technical or engineered material use); USES (Uses) (dissoln. inhibitor; design of 193nm pos. **photoresists** using acrylic tetrapolymer and 5 β -steroid dissoln. inhibitors)

RN 172615-57-5 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-, 1,1-dimethylethyl ester, (3 α ,5 β)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST **photoresist** acrylic tetrapolymer steroid dissoln inhibitor

IT Etching

Solution process

(design of 193nm pos. **photoresists** using acrylic tetrapolymer and 5 β -steroid dissoln. inhibitors)

IT Acrylic polymers, uses

RL: TEM (Technical or engineered material use); USES (Uses) (design of 193nm pos. **photoresists** using acrylic tetrapolymer and 5 β -steroid dissoln. inhibitors)

IT Steroids, uses

RL: TEM (Technical or engineered material use); USES (Uses) (5 β -, design of 193nm pos. **photoresists** using acrylic tetrapolymer and 5 β -steroid dissoln. inhibitors)

IT **Lithography**

(photo-, design of 193nm pos. **photoresists** using acrylic tetrapolymer and 5 β -steroid dissoln. inhibitors)

IT **Resists**

(photo-, pos.-working, design of 193nm pos. **photoresists** using acrylic tetrapolymer and 5 β -steroid dissoln. inhibitors)

IT Molecular structure-property relationship

(solubilization, design of 193nm pos. **photoresists** using acrylic tetrapolymer and 5 β -steroid dissoln. inhibitors)

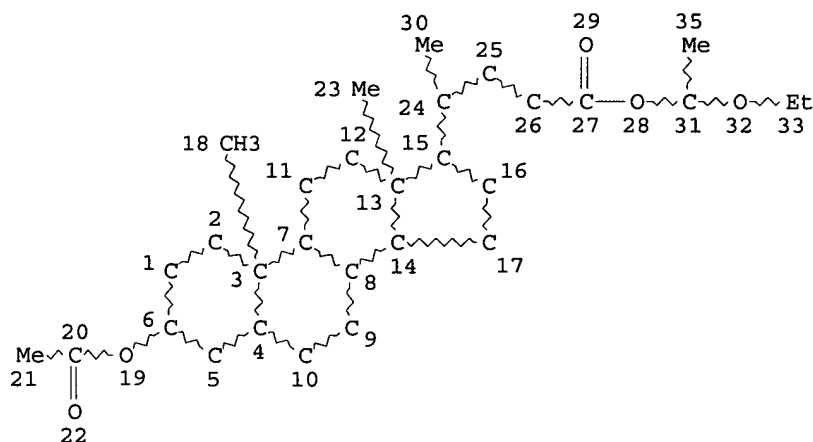
IT 1249-75-8, Methyl lithocholate 1448-36-8, Methyl cholate 3253-69-8, Methyl lithocholate acetate 10538-55-3, Methyl ursodeoxycholate 122752-67-4, tert-Butyl cholate 169965-90-6, tert-Butyl lithocholate 172615-56-4 172615-57-5

RL: TEM (Technical or engineered material use); USES (Uses) (dissoln. inhibitor; design of 193nm pos. **photoresists**)

using acrylic tetrapolymer and 5 β -steroid dissoln. inhibitors)

- IT 84563-54-2, Bis(p-tert-butylphenyl)iodoniumtriflate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (photoacid generator; design of 193nm pos. **photoresists**
 using acrylic tetrapolymer and 5 β -steroid dissoln. inhibitors)
- IT 72145-62-1, tert-Butyl methacrylate-Methacrylic acid-methyl methacrylate copolymer 169965-89-3, tert-Butyl methacrylate-isobornyl methacrylate-methacrylic acid-methyl methacrylate copolymer
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**resist**; design of 193nm pos. **photoresists**
 using acrylic tetrapolymer and 5 β -steroid dissoln. inhibitors)

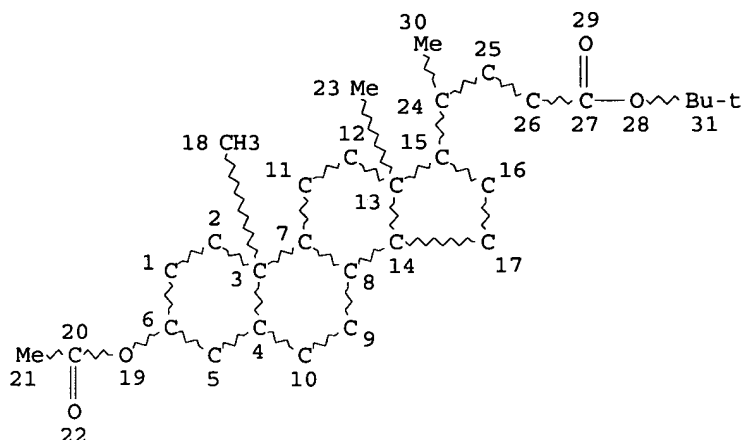
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 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
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 NUMBER OF NODES IS 34

STEREO ATTRIBUTES: NONE
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GRAPH ATTRIBUTES:
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 L17 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L14 OR L15
 L18 QUE ABB=ON PLU=ON RESIST OR RESISTS OR PHOTORESIST?
 OR PHOTOMASK? OR (PHOTO# OR POSITIVE OR NEGATIVE) (A) (RE
 SIST# OR LITHOG? OR MASK?)
 L19 11 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 AND L18
 L20 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 NOT L19

=> d l20 1-3 ibib abs hitstr hitind

L20 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:158284 HCAPLUS

DOCUMENT NUMBER: 132:293319

TITLE: Metal-Catalyzed Acyl Transfer Reactions of
 Enol Esters: Role of Y5(OiPr)130 and
 (thd)2Y(OiPr) as Transesterification Catalysts

AUTHOR(S): Lin, Mei-Huey; RajanBabu, T. V.

CORPORATE SOURCE: Department of Chemistry, The Ohio State
 University, Columbus, OH, 43210, USA

SOURCE: Organic Letters (2000), 2(7), 997-1000
 CODEN: ORLEF7; ISSN: 1523-7060

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 132:293319

AB Primary and secondary alcs. react with vinyl or isopropenyl
 acetate at room temperature in the presence of catalytic amts. (0.05-1
 mol %) of Y5(OiPr)130 to give the corresponding esters. In
 selected cases, the yttrium catalyst promotes the selective
 O-acylation of amino alcs. without the formation of the amide.
 Enol esters also react with α -amino acid esters in the
 absence of a catalyst, at room temperature, to give the corresponding
 amides.

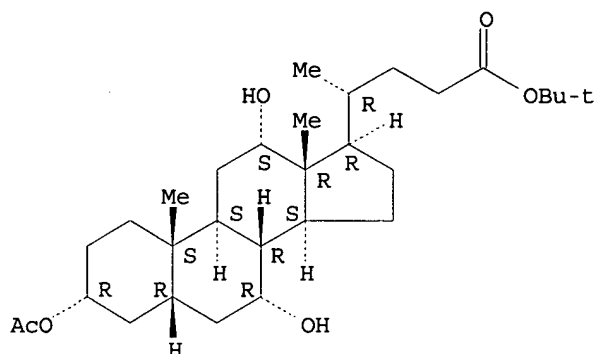
IT 130782-09-1P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (transesterification of primary and secondary alcs. by enol
 esters catalyzed by Y5(OiPr)130 and (thd)2Y(OiPr))

RN 130782-09-1 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-7,12-dihydroxy-,
 1,1-dimethylethyl ester, (3 α ,5 β ,7 α ,12 α)-
 (9CI) (CA INDEX NAME)

Absolute stereochemistry.



CC 21-2 (General Organic Chemistry)

IT 93-92-5P 120-51-4P 140-11-4P, Benzyl acetate 622-45-7P,
 Cyclohexyl acetate 6270-03-7P 21040-45-9P, (E)-Cinnamyl
 acetate 87751-69-7P 91048-16-7P 130782-09-1P
 142784-72-3P 264924-31-4P 264924-33-6P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (transesterification of primary and secondary alcs. by enol
 esters catalyzed by Y5(OiPr)130 and (thd)2Y(OiPr))

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L20 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1991:229231 HCAPLUS

DOCUMENT NUMBER: 114:229231

TITLE: Preparation of 24-oxosteroid derivatives
 INVENTOR(S): Takahashi, Takashi; Ando, Yoshinori; Sakane,
 Soichi; Nakagawa, Sunao; Shiono, Manzo

PATENT ASSIGNEE(S): Kuraray Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 22 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

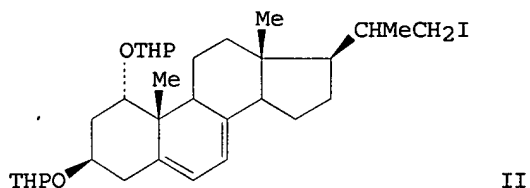
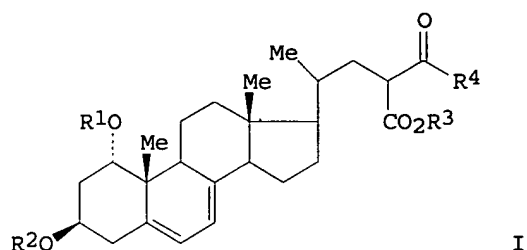
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 03014558	A2	19910123	JP 1989-147628	1989 0609

PRIORITY APPLN. INFO.: JP 1989-147628

1989
0609

OTHER SOURCE(S): MARPAT 114:229231

GI



AB 24-Oxosteroids [I; R1,R2 = H, protecting group; R3 = alkyl, alkenyl, aralkyl, aryl; R4 = CX1X2X3 wherein X1 = H, (protected) OH, etc., X2,X3 = H, Me, (protected) hydroxymethyl, etc., X1X2 = CH2, CH2CH2], useful as intermediates for vitamin D3 derivs. in treating Ca metabolism deficiencies, are prepared A solution of 158.7 mg 60% NaH in DMF and 788 mg Me2CHCOCH2CO2CH2CH:CH2 in DMF was added to 1.38 g pregnadiene derivative II (THP = tetrahydro-2-pyranyl) in DMF and the solution was heated at 50° under N to give 1.90 g cholestadienone derivative I where R1 = R2 = THP, R3 = allyl, R4 = Me2CH.

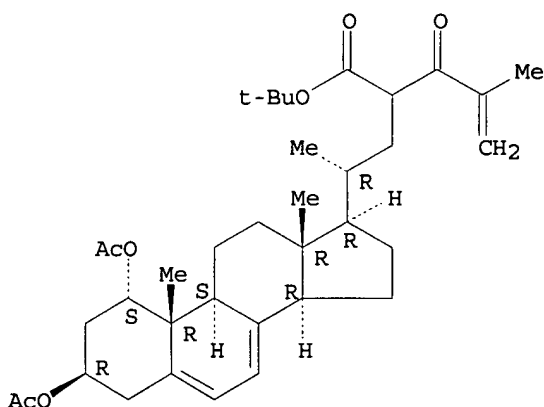
IT 133856-16-3P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, as intermediate for vitamin D3)

RN 133856-16-3 HCAPLUS

CN Cholesta-5,7,25-triene-23-carboxylic acid, 1,3-bis(acetyloxy)-24-oxo-, 1,1-dimethylethyl ester, (1 α ,3 β)- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



IC ICM C07C401-00

ICS C07J009-00

ICA A61K031-59

CC 32-7 (Steroids)

IT 69788-17-6P 70835-01-7P 133856-14-1P 133856-15-2P

133856-16-3P 133856-17-4P 133856-18-5P 133856-19-6P
 133856-20-9P 133856-21-0P 133856-22-1P 133856-23-2P
 133856-24-3P 133856-25-4P 133856-26-5P 133856-27-6P
 133856-28-7P 133856-29-8P 133856-30-1P 133856-31-2P
 133856-32-3P 133856-33-4P 133856-34-5P 133907-36-5P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (preparation of, as intermediate for vitamin D3)

L20 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1991:6933 HCAPLUS

DOCUMENT NUMBER: 114:6933

TITLE: New procedures for selectively protected
 cholic acid derivatives. Regioselective
 protection of the 12 α -hydroxy group, and
 tert-butyl esterification of the carboxyl
 group

AUTHOR(S): Bonar-Law, Richard P.; Davis, Anthony P.;
 Sanders, Jeremy K. M.

CORPORATE SOURCE: Dep. Chem., Trinity Coll., Dublin, UK

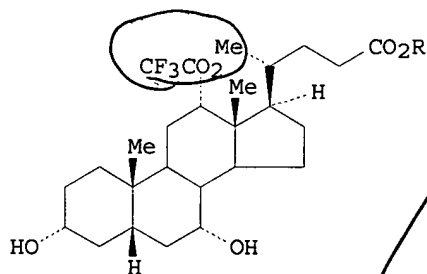
SOURCE: Journal of the Chemical Society, Perkin
 Transactions 1: Organic and Bio-Organic
 Chemistry (1972-1999) (1990), (8), 2245-50
 CODEN: JCPRB4; ISSN: 0300-922X

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 114:6933

GI



AB Effective procedures have been developed for the preparation of various
 selectively protected cholic acid derivs. Treatment of cholic
 acid or Me cholate with trifluoroacetic anhydride in THF, followed
 by partial deacylation under acidic conditions, leads to the
 12 α -trifluoroacetates I (R = H, Me) resp. Trifluoroacetic
 anhydride may also be used as a condensing agent in the synthesis
 of tert.-Bu cholates. Particularly notable is the preparation of the
 ester I (R = CMe₃), which incorporates both these developments and
 is arguably the most efficient method yet for differentiating
 between positions 7 and 12 in the cholic acid nucleus.

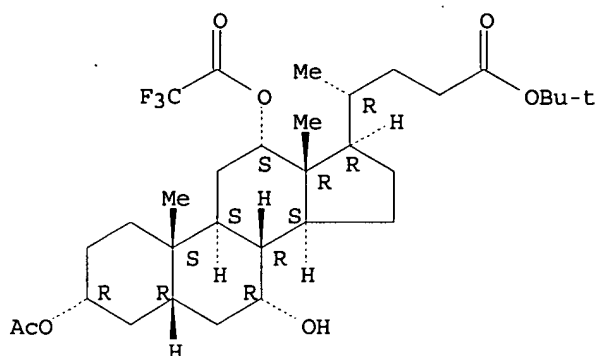
IT 130782-07-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
 (Preparation); RACT (Reactant or reagent)
 (preparation and acidic hydrolysis of)

RN 130782-07-9 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-7-hydroxy-12-
 [(trifluoroacetyl)oxy]-, 1,1-dimethylethyl ester,
 (3 α ,5 β ,7 α ,12 α)-(9CI) (CA INDEX NAME)

Absolute stereochemistry.



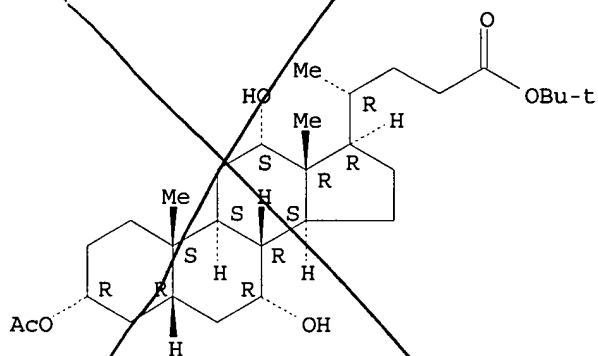
IT 130782-09-1P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

RN 130782-09-1 HCAPLUS

CN Cholan-24-oic acid, 3-(acetyloxy)-7,12-dihydroxy-,
1,1-dimethylethyl ester, (3 α ,5 β ,7 α ,12 α)-
(9CI) (CA INDEX NAME)

Absolute stereochemistry



CC 32-6 (Steroids)

IT 130782-07-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)
(preparation and acidic hydrolysis of)

IT 7432-44-2P 16991-63-2P 122752-67-4P 130781-99-6P

130782-00-2P 130782-01-3P 130782-04-6P 130782-09-1P

RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

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